

**Appln No. 09/930,000**  
**Amdt date October 25, 2004**  
**Reply to Office action of July 26, 2004**

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) An electronic circuit prototyping system, comprising:
  - a) a personal computer having at least one expansion slot;
  - b) a multi-purpose data acquisition card installed in said expansion slot;
  - c) software associated with said data acquisition card residing in memory of said personal computer and being in communication with said data acquisition card, said software including a custom communication driver; and
  - d) a prototyping board interface coupled to said data acquisition card for connecting to a circuit to be tested, said prototyping board interface including
    - i) a communication module for communicating with said data acquisition card and said associated software via said custom communication driver,
    - ii) a function generator interface and variable DC voltage module coupled to said communication module,
    - iii) a function generator module coupled to said function generator interface and variable DC voltage module,
    - iv) an analog I/O module coupled to said communication module and to said function generator interface and variable DC voltage module,
    - v) a current amplifier and frequency calibration

**Appln No. 09/930,000**

**Amdt date October 25, 2004**

**Reply to Office action of July 26, 2004**

module coupled to said communication module, to said function generator module, and to said analog I/O module, and

vi) a first edge connector for receiving one of a prototyping board and a protection board, said first edge connector being coupled to said communication module, to said function generator interface and variable DC voltage module, to said function generator module, to said analog I/O module, and to said current amplifier and frequency calibration module.

2. (Original) The system according to claim 1, wherein:

    said communications module supports 8-bit write, 7-bit addressing, 1-bit parity checking, and 8-bit read.

3. (Original) The system according to claim 2, wherein:

    said communications module has a data transfer rate of approximately 2400 bps.

4. (Original) The system according to claim 3, wherein:

    said function generator module utilizes inexpensive digital to analog converters and analog switching gates to control a low cost analog function generator chip.

5. (Original) The system according to claim 4, wherein:

    said digital to analog converters and analog switching gates are latched, so that said function generator can hold its state indefinitely.

6. (Original) The system according to claim 5, wherein:

**Appln No. 09/930,000**

**Amdt date October 25, 2004**

**Reply to Office action of July 26, 2004**

said function generator can generate sine, triangle and square waveforms from approximately 0.1 Hz to 250 kHz.

7. (Original) The system according to claim 6, wherein:

    waveform choice, coarse frequency, fine frequency, amplitude, and direct current (DC) voltage offset are all programmable.

8. (Original) The system according to claim 7, wherein:

    said function generator has amplitude modulation (AM) and frequency modulation (FM) inputs coupled to said first edge connector and to said analog I/O module.

9. (Original) The system according to claim 8, wherein:

    waveform output is fed back into said data acquisition card via analog gates.

10. (Original) The system according to claim 9, wherein:

    said analog I/O module includes analog gates and simple linear circuits for routing analog inputs and analog outputs of said data acquisition card to emulate a full-featured digital multimeter.

11. (Currently Amended) The system according to claim 10, wherein:

    said analog I/O module functions as both a 2-terminal and 3-terminal I-V curve tracer capable of characterizing diodes and transistors.

**Appln No. 09/930,000**

**Amdt date October 25, 2004**

**Reply to Office action of July 26, 2004**

12. (Currently Amended) The system according to claim 11, wherein:

    said ~~prototyping~~ board interface further includes

    vii) a manual control module and front panel coupled to said communication module, to said function generator interface and variable DC module, to said function generator module, to said analog I/O module, and to said current amplifier and frequency calibration module.

13. (Original) The system according to claim 12, wherein:

    said function generator can be controlled from said personal computer or from said manual control module and front panel.

14. (Currently Amended) The system according to claim 13, wherein:

    said ~~prototyping~~ board interface further includes

    viii) an address and status module coupled to said communication module, to said function generator interface and variable DC module, to said analog I/O module, to said current amplifier and frequency calibration module and to said first edge connector.

15. (Currently Amended) The system according to claim 14, wherein:

    said ~~prototyping~~ board interface further includes

    ix) a protection board installed in said first edge

**Appln No. 09/930,000**

**Amdt date October 25, 2004**

**Reply to Office action of July 26, 2004**

connector, said protection board having a second edge connector for receiving a prototyping board.

16. (Original) The system according to claim 15, wherein:

    said protection board includes at least one fuse, at least one resistor network, and at least one diode network.